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Document Control Desk
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

Re: Virgil C. Summer Nuclear Station Unit 1
Docket No. 50/395
Operating License No. NPF-12
Report of Status of Decommissioning Funding

Ladies and Gentlemen:

The South Carolina Public Service Authority (Authority) and Dominion Energy South Carolina (DESC) have ownership interests of one-third and two-thirds, respectively, in the Virgil C. Summer Nuclear Station, Unit 1. As provided in 10 CFR § 50.75 (f)(1), each power reactor licensee is required to report to the Nuclear Regulatory Commission (NRC) on a calendar year basis, beginning March 31, 1999, and every two years thereafter, the status of its decommissioning funding for each reactor or share of reactor it owns. DESC has advised the Authority that it will disclose the required information relative to its two-thirds ownership share in a separate submittal.

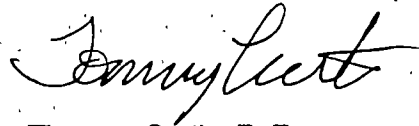
The Authority's one-third share using the NRC formula for the minimum funding required for license termination is approximately \$156 million as of December 31, 2020. This one-third liability is funded by payments to an external sinking fund as provided for in 10 CFR § 50.75. The escalated one-third liability for license termination costs is expected to total \$528 million, stated in dollars of the year of expenditure. The market value of the external fund was approximately \$155 million as of December 31, 2020. (Please see Attachment 1.)

A site-specific decommissioning study completed in 2020 identified the total decommissioning costs for the site. Total site decommissioning includes license termination, spent fuel management and site restoration. The total costs identified by the study are in excess of the NRC formula for minimum funding requirements. Further, as the result of a 2006 settlement with the Department of Energy (DOE), the Authority expects to receive reimbursement for spent fuel management costs incurred that would have been avoided had the DOE met its contractual obligation to store spent fuel. The one-third liability in excess of the NRC minimum funding requirements less DOE reimbursements is estimated by the Authority to be approximately \$230 million as of December 31, 2020. The escalated one-third liability is expected to be approximately \$3.643 billion, stated in dollars of the year of expenditure. The market value of the Authority's internal fund, designated for spent fuel management and site restoration, was approximately \$92 million as of December 31, 2020. (Please see Attachment 1.)

A001
NRR

If there are any questions concerning this report, please contact me at (843) 761-4134.

Sincerely,

A handwritten signature in cursive script, appearing to read "Tommy Curtis".

Thomas Curtis, P. E.

TBC:trw

Attachments

cc: Laura Dudes
Carey "Mac" Read, Jr.
Vaughn Thomas

- 1(a). The minimum decommissioning fund estimate,
pursuant to 10 CFR § 50.75 (b) and (c).

\$155,973,533

Base Amount for PWR between 1,200 MWt and 3,400 MWt

$$\begin{aligned}\text{Estimated Cost (Year X)} &= (1986 \$ \text{ Base Cost}) (AL_x + BE_x + CB_x) \\ &= (\$100,520,000) \{(.65 \times 2.758) + (.13 \times 2.257) + (.22 \times 11.679)\} \\ &= \$467,920,600\end{aligned}$$

Authority's one-third share of 2020 Estimated Cost = \$155,973,533

Where:

$$\begin{aligned}A &= .65 && 10 \text{ CFR } \S 50.75 (c)(2) \\ B &= .13 && 10 \text{ CFR } \S 50.75 (c)(2) \\ C &= .22 && 10 \text{ CFR } \S 50.75 (c)(2) \\ L_x &= 2.758 && (\text{Computed Below}) \\ E_x &= 2.257 && (\text{Computed Below}) \\ P_x &= 2.038 && (\text{Computed Below}) \\ F_x &= 2.559 && (\text{Computed Below}) \\ B_x &= 11.679 && (\text{NUREG 1307 Rev. 18})\end{aligned}$$

$$\begin{aligned}1986 \$ \text{ Base Cost} &= (\$75,000,000 + .0088P_{\text{million}}) \\ &= (\$75,000,000 + 25,520,000) \\ &= \$100,520,000\end{aligned}$$

$$P = 2,900 \text{ MWt}$$

$$\begin{aligned}L_x &= \text{Base } L_x (\text{Dec 2005}) \times \text{ECI}(\text{Qtr 4 2020}) / 100 \\ &= 1.98 \times 139.3 / 100 \\ &= 2.758\end{aligned}$$

$$\begin{aligned}P_x &= \text{December 2020 Value} / \text{January 1986 Value} \\ &= 232.7 / 114.2 \\ &= 2.038\end{aligned}$$

$$\begin{aligned}F_x &= \text{December 2020 Value} / \text{January 1986 Value} \\ &= 209.8 / 82.0 \\ &= 2.559\end{aligned}$$

$$\begin{aligned}E_x &= \{(.58P_x) + (.42F_x)\} \\ &= \{(.58 \times 2.038) + (.42 \times 2.559)\} \\ &= (1.182 + 1.075) \\ &= 2.257\end{aligned}$$

Fourth Quarter 2020 / December 2020 values in the following Bureau of Labor Statistics indices were used to compute NRC minimum requirements:

Employment Cost Index – Total compensation, private industry, South region
Series ID: CIU2010000000220I

Producer Price Index – Commodities (Industrial electric power)
Series ID: wpu0543

Producer Price Index – Commodities (Light fuel oils)
Series ID: wpu0573

- 1(b). Escalation of the Authority's one-third share of the minimum funding requirement through the end of decommissioning.

Cost categories Labor, Equipment & Materials, Burial, and Other were estimated in a site-specific decommissioning study. These costs were escalated through the end of the decommissioning period based on various indices and estimates. Ultimate decommissioning costs to be funded from the external trust are estimated at \$527,797,403 in escalated dollars.

2. Market value of the external trust fund at December 31, 2020 for items included in 10 CFR § 50.75.

\$154,879,581

3. Schedule of annual amounts remaining to be collected for items in 10 CFR § 50.75.

2020 Dollars						
Year	Beginning Balance	Decommissioning Expenditures	Annual Deposits	Earnings	Ending Balance	Real Rates of Return
2021	154,879,581		0	325,247	155,204,828	0.0021
2022	155,204,828		418,680	279,369	155,902,877	0.0018
2023	155,902,877		418,680	187,083	156,508,640	0.0012
2024	156,508,640		418,680	109,556	157,036,876	0.0007
2025	157,036,876		418,680	109,926	157,565,482	0.0007
2026	157,565,482		418,680	94,539	158,078,701	0.0006
2027	158,078,701		418,680	79,039	158,576,421	0.0005
2028	158,576,421		418,680	63,431	159,058,531	0.0004
2029	159,058,531		418,680	47,718	159,524,929	0.0003
2030	159,524,929		418,680	63,810	160,007,419	0.0004
2031	160,007,419		418,680	64,003	160,490,102	0.0004
2032	160,490,102		418,680	64,196	160,972,978	0.0004
2033	160,972,978		418,680	64,389	161,456,047	0.0004
2034	161,456,047		418,680	48,437	161,923,164	0.0003
2035	161,923,164		418,680	48,577	162,390,421	0.0003
2036	162,390,421		418,680	48,717	162,857,818	0.0003
2037	162,857,818		418,680	48,857	163,325,355	0.0003
2038	163,325,355		418,680	32,665	163,776,700	0.0002
2039	163,776,700		418,680	32,755	164,228,136	0.0002
2040	164,228,136		418,680	32,846	164,679,661	0.0002
2041	164,679,661		418,680	32,936	165,131,277	0.0002
2042	165,131,277	9,284,140		15,585	155,862,722	0.0001
2043	155,862,722	22,281,933		13,358	133,594,147	0.0001
2044	133,594,147	22,281,933		11,131	111,323,345	0.0001
2045	111,323,345	22,281,933		8,904	89,050,316	0.0001
2046	89,050,316	22,281,933		0	66,768,383	0.0000
2047	66,768,383	22,281,933		0	44,486,450	0.0000
2048	44,486,450	22,281,933		0	22,204,517	0.0000
2049	22,204,517	12,997,795		0	9,206,722	0.0000
Total	154,879,581	155,973,533	8,373,600	1,927,074	9,206,722	

4. The assumptions used regarding escalation in decommissioning cost, rates of earnings on decommissioning funds, and rates of other factors used in funding projections follow:

- The previous schedule of annual amounts remaining to be collected is based on a DECON method of decommissioning. In contrast, the Authority currently intends to utilize a SAFSTOR method of decommissioning.
- Costs are escalated by four categories identified in the 2020 site-specific study using the following rates: labor (2.8%), equipment and materials (1.3%), waste burial (3.8%) and other (2.8%). These rates were proposed in an internal memorandum and approved on November 12, 2020 by the Chief Generation Officer and represent the Authority's best estimate of future cost increases (see Attachment 2). The schedule below shows weighted average escalation rates reflecting the above cost categories weighted by individual category costs over the sum of the four categories.
- LLW will be disposed of using a combination of compact-affiliated and non-compact disposal facilities.
- The trust fund accrues earnings in accordance with estimated effective yield (approximately 2.8% as shown below). The Authority's Board of Directors approves all customer rates. As the rate-regulatory authority, the Board adopted on March 22, 1999 a resolution containing the following language: "Upon recommendation of management, the Board of Directors authorizes the use of the effective yield of the trust portfolio for purposes of determining future decommissioning funding needs."

	A	B	(A - B)
Year	Projected Earning Rates	Weighted Average Escalation Rates	Real Rates of Return
2021	0.0292	0.0271	0.0021
2022	0.0289	0.0271	0.0018
2023	0.0284	0.0272	0.0012
2024	0.0279	0.0272	0.0007
2025	0.0279	0.0272	0.0007
2026	0.0279	0.0273	0.0006
2027	0.0278	0.0273	0.0005
2028	0.0277	0.0273	0.0004
2029	0.0276	0.0273	0.0003
2030	0.0278	0.0274	0.0004
2031	0.0278	0.0274	0.0004
2032	0.0278	0.0274	0.0004
2033	0.0278	0.0274	0.0004
2034	0.0278	0.0275	0.0003
2035	0.0278	0.0275	0.0003
2036	0.0278	0.0275	0.0003
2037	0.0278	0.0275	0.0003
2038	0.0278	0.0276	0.0002
2039	0.0278	0.0276	0.0002
2040	0.0278	0.0276	0.0002
2041	0.0278	0.0276	0.0002
2042	0.0278	0.0277	0.0001
2043	0.0278	0.0277	0.0001

2044	0.0278	0.0277	0.0001
2045	0.0278	0.0277	0.0001
2046	0.0278	0.0278	0.0000
2047	0.0278	0.0278	0.0000
2048	0.0278	0.0278	0.0000
2049	0.0278	0.0278	0.0000

5. Contracts upon which the licensee is relying pursuant to 10 CFR § 50.75 (e) (1) (v).

None.

6. Modifications to the current funding assurance methods.

None.

7. Material changes to Trust Agreements.

None.

8. Authority's one-third share of the 2020 Site-Specific Study (SAFSTOR method).

	2020 Dollars	Year of Expenditure Dollars
NRC Minimum Funding Requirements - License Termination (radiological decommissioning costs) (1)	155,973,533	527,797,403
Excess Site-Specific Study Costs (license termination, spent fuel management and site restoration costs) Net of Estimated DOE Reimbursements (spent fuel management costs) (2)	230,104,579	3,643,160,951
2016 Site-Specific Study Costs (license termination, spent fuel management and site restoration costs) Net of Estimated DOE Reimbursements (spent fuel management costs) (2)	386,078,112	4,170,958,354

(1) Expenditure years are 2042-2049

(2) Expenditure years are 2042-2124

9. Market value of the internal fund at December 31, 2020
for spent fuel management and site restoration

\$91,947,470



INTER-OFFICE COMMUNICATION

DATE: November 9, 2020

TO: Thomas Curtis, P.E., Chief Generation Officer

FROM: Matthew McCants, P.E., Director, Generation Services *mm*

SUBJECT: VC Summer Unit 1 Decommissioning Cost Update

As required by the Nuclear Regulatory Commission (NRC) and in accordance with prudent utility practice, Santee Cooper systematically sets aside funds to provide for the eventual decommissioning of VC Summer Nuclear Station Unit 1. The annual decommissioning funding deposit amount is currently based on NRC requirements, estimated cost escalation and fund earnings rates, the results of a site-specific decommissioning cost study conducted by TLG Services, Inc. in 2016, estimated Department of Energy (DOE) reimbursement of spent fuel storage costs, and a SAFSTOR (delayed decommissioning) scenario.

In 2019, TLG initiated an update to the 2016 decommissioning cost study and completed the update in 2020. The chart below compares the results of the 2016 TLG study with the 2020 study.

Comparison of TLG Study Results - \$000s				
	2016 Study		2020 Study	Increase
Year of Costs	2016	2019	2019	2019
Decommissioning Costs @ 1/3	415,076	446,763	451,799	5,036

The findings of the 2020 study indicate that since 2016, the overall cost for decommissioning has escalated approximately \$5.0 million more than anticipated by current funding assumptions. The variance is attributable to the addition of several structures to plant inventory (craft training center, nuclear training center and annex, new nuclear office building, industrial pump house, chiller and switchgear, head assembly building, and two bullet resistant enclosures) and differences in estimated and actual cost escalations.

In conjunction with the 2020 decommissioning cost study, TLG completed a related asset retirement obligation (ARO) study. This second study was used as basis for updating the ARO liability associated with decommissioning VC Summer Unit 1. Based on the results of the two studies, current cost escalation assumptions have been reviewed and changes are recommended. The new proposed cost escalation assumptions by cost category are as follows:

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Cost Category	Current Escalation Assumption	Proposed Escalation Assumption
Labor	2.70%	2.79%
Equipment & Materials	1.20%	1.27%
Burial	3.78%	3.80%
Other	2.78%	2.80%

The proposed escalation rates for *Labor*, *Equipment & Materials*, and *Other* are derived from published indices and are used by TLG to establish a basis for change in the ARO liability. No readily available published index for *Burial* (low-level radioactive waste disposal) costs exists; however, TLG determined that adding one percent to the Consumer Price Index reasonably correlated to the change in *Burial* costs over the last decade.

The TLG 2020 decommissioning cost study includes SAFSTOR (delayed decommissioning) scenarios for both 60 and 80 years of plant operation. Current funding is based on a 60-year plant life; however, Dominion's plan is to extend the operating license an additional 20 years and operate the plant a total of 80 years. In order to align with Dominion and better project funding needs, it is recommended that an 80-year plant life be adopted for decommissioning funding purposes. The one-third cost for a SAFSTOR scenario assuming 80 years of plant operations is \$416 million. The 80-year SAFSTOR scenario cost estimate is less than the 60-year scenario due to a shorter time period for operating the spent fuel storage facility after plant shutdown.

Projected earnings for the trust and the internal fund were reevaluated by Santee Cooper's Treasury department and both have decreased. From March 2019 to May 2020, the weighted average estimated earnings rate for the trust decreased from 3.3% to 3.0%, while the weighted average rate for the internal fund decreased from 3.7% to 3.3%.

The NRC required minimum funding amount was also updated based on the prescribed minimum funding formula and updated escalation rates. The NRC minimum amount increased 0.9% from the prior year due to a 2.5% increase in the labor escalation factor. The energy escalation factor decreased 0.7% while the burial factor stayed the same. The impact on trust funding was minimal.

Based on the results of the 2020 TLG decommissioning cost study, the proposed escalation rates, the recommended adoption of an 80-year plant life, the updated earnings rates and NRC minimum funding amount, the current DOE spent fuel storage cost reimbursement assumption, and a SAFSTOR scenario, the annual funding amount will need to increase to approximately \$2.5 million. It is expected that implementing the proposed decommissioning contributions as outlined below, along with projected earnings, will sufficiently provide for Santee Cooper's share of the cost to decommission VC Summer Unit 1.

Effective January 1, 2021, the new monthly contribution requirement is as follows:

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	2020 Current Funding	2021 & Later Proposed Funding	Increase (Decrease)
Trust	\$9,605	\$0	(\$9,605)
Internal Fund	\$9,125	\$205,355	\$196,230
Total Monthly	\$18,730	\$205,355	\$186,625
Total Annual	\$224,760	\$2,464,260	\$2,239,500

Please let me know if you have any questions or would like to discuss further.

MJM:trw

Concurrence: 

Thomas Curtis, P.E.
 Chief Generation Officer

11/12/2020
 Date

cc: Pamela Williams
 Ken Lott
 Suzanne Ritter
 Daniel Manes